

NGV's around the world

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Thank you for inviting me to speak at this conference, I'll take you on a multi picture tour of the world on NGV's. I'll keep away from the North American market as I would assume you know more about it than I do.

Scania Sydney

The history of NGVs is a long history with a modern solution, not modern enough to be happy with, but still - it is well under way.

China buses

In the older days, you see very easily what buses needed to refuel. Cylinders, storage and range is still the most difficult bottleneck to widen

Truck outside of Pemex HQ, Mexico City

The major NGV benefit is that of low emissions. That is the basis for the NGV operation. This truck was spotted outside the Pemex HQ in Mexico city and it is the first hydrogen car, it burns all the hydrogen but discharges all the carbon

TNO Acid

Measuring the environmental benefits tells us there is a benefit, provided that engines and systems stay in tune

TNO Smog

Reactive HC's are low and the unburned methane from gas operation account for 1/4 up to 1 % of the total greenhouse effect

Table

The world just recently saw its 1,000,000 NGV and my own county just broke 1,000. This makes for a second place world wide in number of alternatives after LPG. In Argentina we see 5,000 new NGV's and they have half the world fleet. Other numbers are Italy 300,000, Russia and the US 75.000 each, Canada and Australia.

Firebird

This Firebird was fun to drive, it was available already in 1991 in San Francisco

Nagano

This Nissan top-of-the-line was one of many NGV's taking VIP's and the public around the Nagano Olympic games

Pick-up

This Mazda dedicated pick-up operates in Tokyo area for Kawasaki motorcycle manufacturer

Bus

Nissan Diesel has produces a low emission spark ignited gas bus engine, of which this is one of the first.

Civic GX

And we all know of the Civic GX that meets 1/10 of ULEV. This model will be tested in two cars in bio gas operations in Sweden.

Map

Japan does not have many refueling station, but they are located for easy access and...

Figure

... the rapidly growing number of NGV's are now 4,500, just like in Germany.

Scania

In south East Asia, the market comes and goes with the economic growth. This after market converted truck has been in operation for a few years, without OEM involvement...

Refueling

...while the local OEM in Malaysia are building taxicabs on the assembly line

LS Booth

LS Booth in Australia operates this LNG Truck between Adelaide and Melbourne on a daily basis

Brisbane

while this garbage truck operates in Brisbane. Australia operates over 1,000 dedicated and mainly OEM buses of which the first picture that I showed was from the largest NGV order ever placed, one of 252 Scania buses for Sydney

Crash

NGVs are known to be safe, and you North Americans have seen these vehicles before

Utrecht

One night in 1991, a bus garage in Utrecht, Netherlands, went on fire. 37 buses, of which two where gas buses were in there. The local fire department were reluctant to go in there when they started hearing explosions

Burned

What they heard was tire explosions. Norske Veritas, being one of the most reputable safety institute in the world, states that natural gas buses are as safe - or safer - compared with diesel buses.

Cylinders

Lighter weight cylinders and whop rapped ones are introduced to keep the safety up and to reduce weight

Circle

The Stakeholders all need to be satisfied with the solutions, otherwise we don't think the

NGV business is a "flyer". The stakeholders are the OEM's, the Gas- and Oil companies, the end user and the IRS.

On Tour

The UN arranged a European "Rally for Fuels Savings" in 1991, when a caravan of after market converted vehicles drove the 2,000 miles to Kiev from Rome

Mercedes

Beside the Kamaz truck you saw on the previous picture, some 32 vehicles left Rome and 32 arrived safely, the 33rd crashed in Lvov.

Kiev

Once in Kiev, the whole east-west conference group of participants was invited to see the vehicles, talk to the crew and draw their own conclusions.

Moscow

Talking about the East, Russia has 174 refueling stations nation wide, allowing for cross continental driving

TU 154

Beside that, they operate the only LNG aircraft in the world so far, This TU 154 has one gas engine and two standard engines

BG

The British has done it too, they drove on gas from John O'Groths in the very north...

Bridge

...via some spectacular places...

Westminster

...Like the Westminster to Lands End in the far south west edge of the nation.

Ireland

If they do it on the one side, they do it on the other side. This Irish Bord Gais fleet was followed by the nations first gas bus. Once the Secretary of Transport saw it he said "get another five" - so be it.

Brussels

The Belgians try to do it Scientifically...

Italy

...while the Italians use a sexy Bugatti...

BMW

...and the Germans makes it by the engine book.

Iveco bus

The Italian bus manufacturer Iveco have been successful in producing a low emission bus, that is also low on noise, just like any other bus or truck would be that run on gas.

Green Merc

The Mercedes gas bus is now the most spread gas bus of all, being sold in Germany, Sweden, Finland, Norway, Austria, Thailand, Brazil, Argentina, Chile and Australia

Refueling

This New Zealand refueling station carries several qualities of gasoline, diesel plus LPG and natural gas.

Metano

While the Italians have registered "Metano" as a trade mark for natural gas as a fuel.

Shell

In Europe, several Oil companies are setting up refueling stations, which is good for the brand name and for the confidence that it brings to the end user, our customers

Ipiranga

In Brazil, a small but committed company Ipiranga sell CNG on their refueling facilities. Talking about South America, the 8.200 city buses in the first "Clean Sister City" of Santiago de Chile is in process of being converted to natural gas. The first 500 by mandate and from 2001 and on, by meeting new and stringent emission legislations.

Ricardo

When I was invited to speak here, I was asked to spend some of the time to let you know of the success of my own country. This is the first approach to get to the heavy duty market, and it was done by converting the first set of engines properly to meet really low emission levels, which was done in the Co-Nordic Gas Bus project.

Gbg

This led to an order of 20 buses to the city of Göteborg.

Malmö

And 26, 13 of each Volvo and Scania, to my own home town Malmö.

Bio gas

It is not possible to talk of natural gas in Sweden or in Europe any longer without talking about bio gas. It serves as an extension of the limited pipeline and it is a greenhouse strategy for the gas industry, to do their share and more.

Shell

Shell oil company has not only gotten involved in Germany. They have built a full blown alternative fuels station in the heart of Stockholm. It carries the conventional fuels as well as bio gas, ethanol, vegetable oils and ethanol blends

Sydgas

Back to my home town Malmö, the city bus fleet is now at 50 operated on natural gas, 40 % of the taxi fleet and the largest gaseous truck fleet in Europe operates in Malmö and Göteborg. Volvo is one of the few OEM's with a full range of vehicles in their fleet that operates on natural gas and on bio gas.